

## The historical context

The years 1950-2000 saw a nearly three-fold increase in the world's population, from 2.5 billion to 6.1 billion people. This enormous **demographic** change can be seen as the factor largely responsible for the global environmental history of that half-century. Increased birth rates and age expectancies, improved medicines, and astonishingly-increased farm yields meant that more people were living, and living longer. The period was also one of drastically-increased wealth globally. The increases in both population and wealth—even as millions more people than ever fell into the depths of poverty—resulted in the reality we face today: for so many to live as well as they do, all of humanity can no longer be fully sustained on the earth's resources.

Late twentieth-century environmental history is an intricate web of interconnected factors and conditions. Unraveling the tangle to see the individual constituents that form the web is helpful in understanding the larger structure. Each of the following sections will be connected to the others at various points: demographics, land and water use, energy, international movements and cooperation, and economics and politics.

### Population

Thirteen percent of all humans that ever lived have lived between 1950 and 2000.<sup>1</sup> The populations of Asia doubled, Latin America tripled, and Africa almost quadrupled. Taken together, Europe's and North America's populations tripled.<sup>2</sup> Increased food production was made possible by the increased use of chemical fertilizers and pesticides, as well as more irrigation and astronomic amounts of petrol, the latter being used not only in food production but also in its distribution and storage. Increasingly over the period, however, there was not enough farming globally to meet food demands, due to changes in land and water use and loss of farm land to accommodate increased population.<sup>3</sup> By 1998, almost half of the world's population lived in urban areas. In 1990, urban populations accounted for as much as 75 percent of total US and 78 percent of total European populations.<sup>4</sup>

### Land and Water Use

Between 1950 and 1990, the amount of land under cultivation grew to be one third of the earth's land cover, and it was able to feed an extra 4 billion people. Since land was limited, the focus was on getting greater yields out of the same amount of land under cultivation. This was done with fertilizers, pesticides, specialization (growing fewer types of crops) and the development of genetically-engineered and virally-resistant grains. Nineteen ninety-eight, however, was the first year in which using more fertilizer to grow more food did not increase crop yields.<sup>5</sup> While there

<sup>1</sup> John R. McNeill, *Something New under the Sun: An Environmental History of the Twentieth-Century World* (New York: W. W. Norton, 2000), 8.

<sup>2</sup> Ibid., 271.

<sup>3</sup> Lester R. Brown, *Plan B 3.0: Mobilizing to Save Civilization* (New York: W. W. Norton, 2008), 117.

<sup>4</sup> McNeill, *Something New*, 283.

<sup>5</sup> Ibid., 213; Brown, *Plan B 3.0*, 176.

was less and less land available worldwide for cultivation, the land under cultivation was increasingly reaching its limits, with soil erosion and compaction also eating into yields.<sup>6</sup>

There was an intensification of fossil fuel use for producing food in this period.<sup>7</sup> It was taking one calorie of energy for every calorie of food produced, including the fuel that went into the fertilizer, powered the farm machinery, got the food to market, and kept it fresh. Moreover, the chemicals in the soil and the runoff into fresh water supplies were beginning to make people sick.<sup>8</sup>

Amounts of forest and woodland also dropped in the period, each giving way to urban sprawl, but grassland and desert land covers increased.<sup>9</sup> Because of the enormous growth in the number of grazing animals in the period, increased amounts of land were needed for grazing.<sup>10</sup> And increasingly over the half century, this put people in conflict with one another. For example, in Sudan, where the Sahara creeps inches farther south every year, northern herders have been encroaching on southern farmers' lands, resulting in a horrible war affecting the civilian population.<sup>11</sup>

Similar conflicts over water use have increased over the last fifty years. Increased irrigation, another boon to crop yields, meant the rerouting and damming of rivers and the using-up of aquifers faster than they were being replenished.<sup>12</sup> Water was also being lost to contamination from both agricultural and industrial run-off or dumping and to increased levels of evaporation due to rising global temperatures. Lake Chad has decreased 96 percent in the last forty years, and the Aral Sea, having lost two-thirds of its volume and fifteen meters of its depth, became two seas in the same period. Each of these bodies supplies water to multiple nations and millions of people. Half the lakes in Qinghai Province in China have disappeared in the last twenty years, as did 969 of 1,052 lakes in Hebei Province surrounding Beijing.<sup>13</sup>

The contamination of the world's oceans, rising global temperatures, over-fishing, and the dwindling of new ocean fishing grounds, accounted for the collapse of more than two-thirds of the world's fisheries by the last decade in the period.<sup>14</sup> Species are being lost as water temperatures rise. Those species most adaptable are nosing out local fish as the former expand

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<sup>6</sup> McNeill, *Something New*, 35, 47.

<sup>7</sup> Michael Pollan, *The Omnivore's Dilemma* (New York: Penguin Books, 2006), 45.

<sup>8</sup> McNeill, *Something New*, 30.

<sup>9</sup> *Ibid.*, 213.

<sup>10</sup> *Ibid.*, 264.

<sup>11</sup> Brown, *Plan B 3.0*, 118.

<sup>12</sup> McNeil, *Something New*, 154, 180; Brown, *Plan B 3.0*, 74.

<sup>13</sup> Brown, *Plan B 3.0*, 68; McNeill, *Something New*, 164.

<sup>14</sup> McNeill, *Something New*, 250; Brown, *Plan B 3.0*, 97.

their ranges. As poor countries sell their coastal fishing rights to richer countries, these fisheries are also being used up with the added problems of lost lease revenues and fish supplies.<sup>15</sup>

### Energy

Demand for energy increased exponentially in the period owing to the enormous population increase, a huge increase in the world Gross Domestic Product, and technological innovation. As David Christian has written,

Total human energy consumption multiplied many more times in the twentieth century than in all of previous human history. At the end of the twentieth century, the total amount of energy consumed by humans may have been 60,000 to 90,000 times that used by humans early in the Neolithic Period. As a result of these changes, human societies became, in the twentieth century, a major force acting on the biosphere.<sup>16</sup>

Indeed, "at any given time after 1970, about five gallons of oil were in transit at sea for every man, woman, and child on the face of the earth."<sup>17</sup>

There was a shift in the uses of energy midway through the period as well. Whereas agriculture accounted for most energy use earlier in the period, electrical generators accounted for more use later in the period.<sup>18</sup>

Energy demands for transportation also increased, with more people driving greater distances and more vehicles occupying the roads.<sup>19</sup> Between 1948 and 1973 and again after 1984, oil prices dropped and more uses were found for it, for example, in plastics manufacture.<sup>20</sup> Even so, refrigeration accounts for the single greatest consumer use of energy.<sup>21</sup> Global oil prices are tied to global grain prices; if oil is cheap, so is food, and vice versa.<sup>22</sup> One-fifth of the petrol used in the US today is to bring food to market.<sup>23</sup> Both agriculture and energy production are subsidized in rich countries, making for inequalities in ability to enter world markets for poor countries that do not use subsidies.<sup>24</sup>

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<sup>15</sup> Brown, *Plan B 3.0*, 99, 146. Brown also notes the leasing of waters by poor countries to the richer nations for garbage dumping.

<sup>16</sup> David Christian, *Maps of Time: An Introduction to Big History* (Berkeley: University of California Press, 2005), 459.

<sup>17</sup> McNeill, *Something New*, 304.

<sup>18</sup> Vaclav Smil, *Energy in World History* (Boulder: Westview Press, 1994), 230.

<sup>19</sup> Brown, *Plan B 3.0*, 228; McNeill, *Something New*, 60.

<sup>20</sup> McNeill, *Something New*, 305.

<sup>21</sup> Brown, *Plan B 3.0*, 36.

<sup>22</sup> *Ibid.*, 38.

<sup>23</sup> Pollan, *Omnivore's Dilemma*, 83.

<sup>24</sup> Brown, *Plan B 3.0*, 146.

The results of the use of coal and fossil fuels have been harmful to both the earth's land and water. For example, the coal burned in Britain damages Norway's thin soils; China's air pollution affects Japan's air quality.<sup>25</sup> The release of toxic chemicals into the air, such as sulfur from coal burning and chlorofluorocarbons (CFCs) from the burning of fossil fuels, has created unsurpassed climatological change, four times what it was in 1950.<sup>26</sup> This has meant rising seas, which will eventually mean mass migrations of coastal and island-living peoples.<sup>27</sup> Between 1989 and 2000, Mt. Kilimanjaro lost 33 percent of its ice cap, resulting in local rivers becoming seasonal. Warmer seas will also mean the loss of additional fish species.<sup>28</sup>

### International agreements and cooperation

Rachel Carson's *Silent Spring*, a watershed book on pesticides published in 1962, changed forever humans' attitudes toward the environment and their relationship to it. In 1970, 20 million Americans came out to celebrate Earth Day, and in 1990, 200 million people in 140 countries celebrated the earth.<sup>29</sup> In 1971, the UN started the Man and the Biosphere research program, "and by 1990 most rich countries had global-change science programs. Taken together, by 1998 these amounted to the largest research program in world history."<sup>30</sup>

The western nations, led by the US, were the major signers of the Montreal Protocol on Chlorofluorocarbons in 1987, whose amounts in the atmosphere have dropped 60 percent since their peak in 1988.<sup>31</sup> And then there was the Earth Summit in Rio in 1992, which demonstrated the intractability of some nations on some issues, making international agreements difficult to organize. Yet citizens' environmental groups grew, as evidenced by the burgeoning Green Parties in Europe and actions such as those in Japan where, in the 1960s, citizens succeeded in winning damages and legislative changes to guarantee an end to industrial pollution. Lester Brown suggests that this was unprecedented before there had been experiences of international cooperation.<sup>32</sup>

### Economics and politics

The strength of the global economy—unprecedented growth to the tune of a twenty-fold increase between the beginning and end of the century—created demand for goods ever further away. For example, wealthy Americans' taste for beef has meant the loss of increasing amounts of forest to grazing land, notably in the Amazon basin.<sup>33</sup> World Gross Domestic Product per capita was \$100 in 1500 CE, \$2,238 in 1950, and \$11,664 in 1992.<sup>34</sup> Economic growth helped take people out of

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<sup>25</sup> McNeill, *Something New*, 99, 103.

<sup>26</sup> Brown, *Plan B 3.0*, 50.

<sup>27</sup> *Ibid.*, 48.

<sup>28</sup> *Ibid.*, 55.

<sup>29</sup> McNeill, *Something New*, 339.

<sup>30</sup> *Ibid.*, 340.

<sup>31</sup> *Ibid.*, 354.

<sup>32</sup> Brown, *Plan B 3.0*, 352.

<sup>33</sup> *Ibid.*, 320.

<sup>34</sup> McNeill, *Something New*, 6.

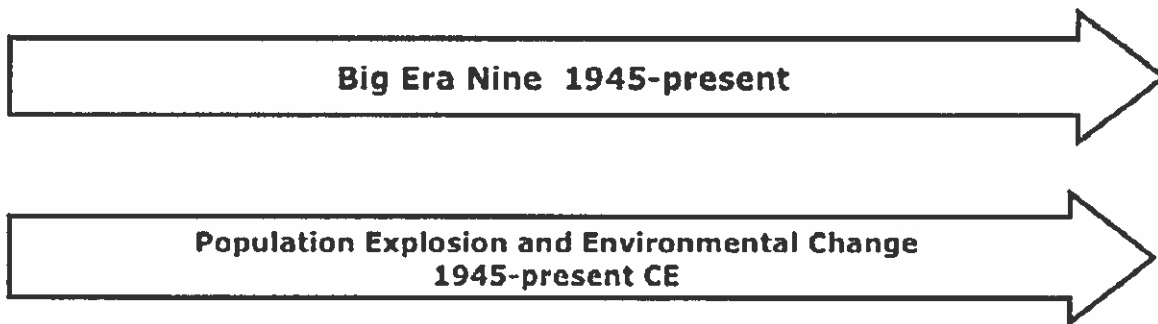
poverty in places such as China.<sup>35</sup> But economic growth also caused serious global environmental problems. “While the economy is growing exponentially, the earth’s natural capacities, such as its ability to supply fresh water, forest products, and seafood, have not increased. ... Today, global demands on natural systems exceed their sustainable yield capacity by an estimated 25 percent.”<sup>36</sup> Some suggest that our future as a species, and the earth’s future as well, depend on a new way of understanding economics and politics with respect to the environment. Lester Brown suggests that taxing the costs of pollution, resource depletion, and energy consumption involved in producing goods would help to pay for the clean-up that is needed immediately.<sup>37</sup> Similarly, David Christian suggests the following:

If environmental constraints do not bring the capitalist world system crashing down—if, instead, it manages to find new markets by selling to the poor as well as to the rich, by seeking profits in ecologically-sustainable production, and by trading more in services and information than in materials—then we can envisage further transformations generated by technologies we can only glimpse at present.<sup>38</sup>

Politically, conflict zones exist in pockets throughout the world, and some of the battles have become more severe as natural resources are more heavily taxed. The aforementioned issues of the loss of fresh water sources and changing demands on the land account for many of the violent conflicts in play today.<sup>39</sup>

### **This unit in the Big Era Timeline**

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<sup>35</sup> Brown, *Plan B 3.0*, 131.

<sup>36</sup> Ibid., 11.

<sup>37</sup> Ibid., 7.

<sup>38</sup> Christian, *Maps of Time*, 483.

<sup>39</sup> Ibid., *Plan B 3.0*, 118.

